

**BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA**

DOCKET NO. 2023-388-E

In the Matter of:)	
)	DIRECT TESTIMONY OF
Application of Duke Energy)	BRENT C. GUYTON
Carolinas, LLC for Authority to)	FOR
Adjust and Increase its Electric Rates)	DUKE ENERGY CAROLINAS, LLC
and Charges)	

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Brent C. Guyton. My business address is 555-A Brevard Road
3 Asheville, North Carolina.

4 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5 A. I am employed by Duke Energy Carolinas, LLC (“DEC” or the “Company”) as
6 Director, Asset Management in Customer Delivery. DEC is a wholly owned
7 subsidiary of Duke Energy Corporation (“Duke Energy”).

8 **Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AS DIRECTOR, ASSET**
9 **MANAGEMENT.**

10 A. My duties and responsibilities include planning for the grid and related system
11 improvement efforts across Duke Energy in the Carolinas to build a smart-
12 thinking grid capable of integrating dynamic energy resources while providing
13 increasingly safe, secure, and reliable energy.

14 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
15 **PROFESSIONAL QUALIFICATIONS.**

16 A. I have a Bachelor of Science degree in Mechanical Engineering from Mercer
17 University. I began working at Duke Energy in 1996, joining one of its
18 predecessor companies, Florida Power Corporation. Prior to assuming my
19 current role for Customer Delivery, I held various leadership positions in the
20 Grid Solutions organization supporting modernization efforts across Duke
21 Energy’s electric utilities. I have held various engineering, operational, and
22 leadership positions over a 31-year electric utility career at Duke Energy and

1 another southeast electric utility. I have been in my current role since January
2 2020.

3 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC**
4 **SERVICE COMMISSION OF SOUTH CAROLINA (“COMMISSION”)**
5 **OR ANY OTHER REGULATORY BODIES?**

6 A. I have not formally testified before this Commission, but I have submitted
7 written testimony in Duke Energy Progress, LLC’s (“DEP”) most recent rate
8 case (Docket No. 2022-254-E), and I have testified before the North Carolina
9 Utilities Commission (“NCUC”) in the most recent DEC and DEP rate cases
10 (NCUC Docket Nos. E-7, Sub 1276 and E-2, Sub 1300).

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

12 A. I am testifying as an expert witness supporting ongoing distribution operations.
13 The purpose of my testimony is to describe and support the existing DEC
14 distribution system; the operation and performance of the distribution system;
15 and the costs necessary to operate and maintain it. Additionally, I describe and
16 support the distribution investments made pursuant to the Company’s Grid
17 Improvement Plan.

18 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

19 A. Following the introduction above, my testimony is organized as follows:

20 I. In Section I of my testimony, I provide a description of DEC’s
21 distribution system and describe notable investments made in our
22 system since the Company’s last rate case in South Carolina.

1 II. In Section II of my testimony, I provide an overview of the operational
2 performance of the Company's distribution system.

III. In Section III of my testimony, I describe in greater detail the Company's Grid Improvement Plan investments, elaborate on some of the associated operational benefits DEC customers have received due to these investments, and outline Grid Improvement Plan stakeholder engagement efforts since the Company's last rate case in South Carolina. My testimony on the Grid Improvement Plan should be read in conjunction with Witness Bennett Fogg's testimony, who describes the transmission-related Grid Improvement Plan investments and associated benefits.

IV. In Section IV of my testimony, I describe other matters related to Advanced Metering Infrastructure (“AMI”) and Electric Transportation (“ET”).

15 **Q. ARE YOU PROVIDING ANY EXHIBITS WITH YOUR TESTIMONY?**

16 A. Yes. I have attached twelve exhibits, described below:

17 Guyton Direct Exhibit 1: South Carolina Grid Improvement Plan Program

18 Summaries

19 Guyton Direct Exhibit 2: 2019 South Carolina Grid Improvement Plan
20 Annual Status Report

21 Guyton Direct Exhibit 3: 2020 South Carolina Grid Improvement Plan
22 Stakeholder Engagement Efforts

1 Guyton Direct Exhibit 4: 2020 South Carolina Grid Improvement Plan
2 Annual Status Report

3 Guyton Direct Exhibit 5: 2021 South Carolina Grid Improvement Plan
4 Stakeholder Engagement Efforts

5 Guyton Direct Exhibit 6: 2021 South Carolina Grid Improvement Plan
6 Annual Status Report

7 Guyton Direct Exhibit 7: 2022 South Carolina Grid Improvement Plan
8 Stakeholder Engagement Efforts

9 Guyton Direct Exhibit 8: 2022 South Carolina Grid Improvement Plan
10 Annual Status Report

11 Guyton Direct Exhibit 9: 2023 South Carolina Grid Improvement Plan
12 Stakeholder Engagement Efforts

13 Guyton Direct Exhibit 10: 2021 Annual South Carolina ET Pilot Report

14 Guyton Direct Exhibit 11: 2022 Annual South Carolina ET Pilot Report

15 Guyton Direct Exhibit 12: 2023 Annual South Carolina ET Pilot Report

16 **Q. WERE THESE EXHIBITS PREPARED BY YOU OR UNDER YOUR**
17 **DIRECTION?**

18 A. Yes.

19 **Q. PLEASE PROVIDE AN EXECUTIVE SUMMARY OF YOUR**
20 **TESTIMONY.**

21 A. DEC delivers electric service to approximately 2.8 million retail customers
22 located throughout a 24,000-square mile service area in the western portion of
23 South Carolina, and portions of western and central North Carolina.

1 Approximately 8,300 of those square miles and 658,000 of the Company's retail
2 customers are in South Carolina. This multi-state electric system includes
3 approximately 67,000 miles of overhead distribution lines, 42,000 miles of
4 underground distribution lines, as well as roughly 420 transmission and 700
5 distribution and industrial substations.

6 As part of the Company's commitment to reliably serve customers and
7 continually improve operations, DEC has invested approximately \$1.2 billion
8 in electric plant in-service for distribution infrastructure in South Carolina since
9 its last rate case. Maintenance work and reliability improvements included
10 replacement of deteriorated wooden poles, replacement of obsolete line and
11 substation equipment, and customer-driven line and substation expansions.

12 The Grid Improvement Plan is built upon strategic, data-driven
13 investments to improve reliability, avoid outages, and speed restoration; harden
14 the grid to protect against cyber and physical threats; expand solar and other
15 innovative technologies across a two-way, smart-thinking grid; and give
16 customers more options and control over their energy use and tools to save
17 money. These foundational improvements transform the grid and provide a new
18 level of operation while providing benefits now and in the years to come. Grid
19 Improvement Plan investment since the Company's last rate case has totaled
20 \$291.3 million and has included installation of reclosers, transformer cut-outs,
21 miles of fiber, and miles of conductor among other equipment types. This work
22 protects the grid through compliance-driven programs, modernizes the grid
23 through programs that leverage advanced technologies, and optimizes the

1 customer's experience through programs that improve resiliency. Our Grid
2 Improvement Plan work continues to be driven by the seven Megatrends
3 identified in our last general rate case proceeding and discussed further herein,
4 which remain the predominant influences on our grid planning and construction
5 efforts.

6 DEC also maintains a comprehensive vegetation management program
7 across the State that works to proactively maintain trees both inside and outside
8 the rights-of-way on regular cycles. This work seeks to improve overall
9 reliability, harden the grid against severe weather, and reduce the impact of
10 vegetation, which currently accounts for 20% to 25% of outages across the
11 system.

12 Our grid investments and Grid Improvement Plan work since our last
13 rate case is helping mitigate outage frequencies and durations; however, we are
14 seeing a slight worsening trend in System Average Interruption Duration Index
15 ("SAIDI") in large part due to an increase in public vehicle accidents since the
16 COVID pandemic in 2020 and an increase in hotline tag outages, which occur
17 from using sensitive protective device settings to protect line workers while
18 they are working on energized circuits to complete Grid Improvement Plan
19 work, as further described below. System Average Interruption Frequency Index
20 ("SAIFI") scores are impacted much more significantly by hotline tag outages
21 as they tend to impact large numbers of customers but tend to be relatively short
22 duration outages.

1 In addition to these investments in our distribution system, we have also
2 completed the installation of AMI technology since our last rate case and are
3 investing in the development of up to 40 electric vehicle (“EV”) fast chargers
4 across our South Carolina service territory.

5 Overall, the DEC grid is reliable and well-maintained. While the
6 Company has worked hard to maintain the system and reliably meet the needs
7 of customers, we understand more must be done to improve the State’s energy
8 infrastructure to meet the energy challenges and opportunities that lie ahead,
9 and we are committed to making the investments necessary to meet these
10 challenges.

11 **I. DEC’S DISTRIBUTION SYSTEM OVERVIEW AND**
12 **INVESTMENTS SINCE THE COMPANY’S LAST RATE CASE IN**
13 **SOUTH CAROLINA**

14 **Q. PLEASE GENERALLY DESCRIBE DEC’S DISTRIBUTION SYSTEM**
15 **IN THE CAROLINAS.**

16 A. As previously mentioned, the distribution system is comprised of
17 approximately 67,000 miles of overhead distribution lines and 42,000 miles of
18 underground distribution lines. DEC’s distribution system also includes roughly
19 700 distribution and industrial substations.

20 In addition to power lines and substations, the system includes
21 equipment and facilities such as control rooms, computers, poles, transformers,
22 regulators, capacitors, streetlights, meters, automated reclosers,
23 communications devices and protective relays. Together, these assets provide
24 the Company considerable operational flexibility with its distribution system

1 and allow DEC to provide safe, reliable, and affordable power to the Company's
2 customers in South Carolina.

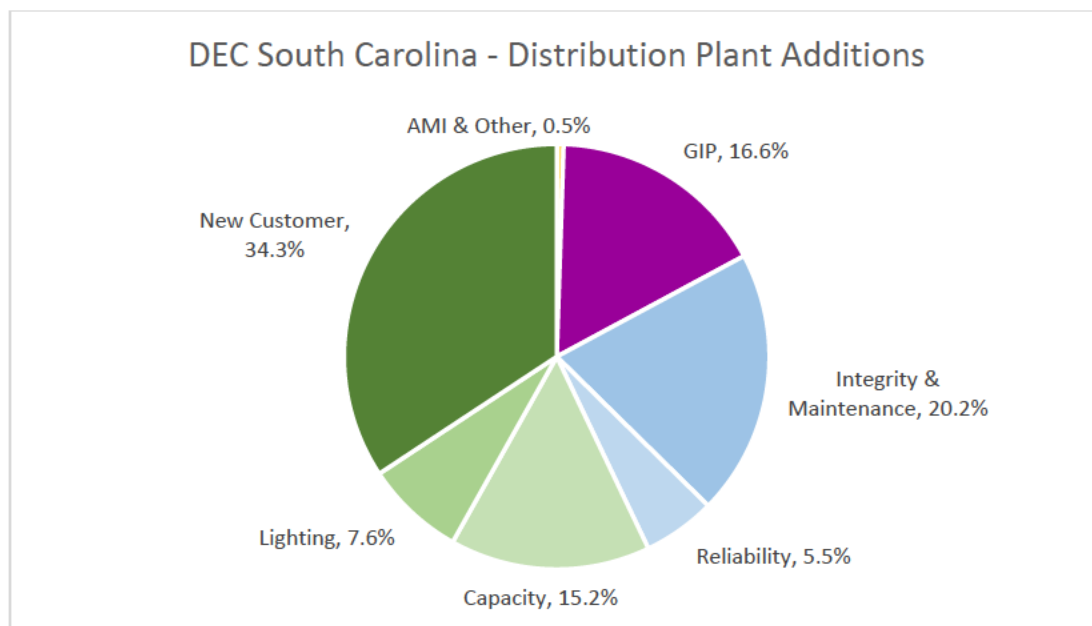
3 **Q. HAS DEC'S DISTRIBUTION SYSTEM GROWN SINCE THE LAST**
4 **RATE CASE?**

5 A. Yes. The distribution system has expanded over time to ensure adequate system
6 voltage and capacity based on projected system loading, and contingency
7 requirements related to the provision of safe and reliable service to our
8 customers. For the DEC distribution system, approximately 3,400 distribution
9 line miles and 27,400 transformers were added in the Carolinas from 2019
10 through 2022. Approximately 980 of these miles and 8,400 of these
11 transformers were added to the DEC distribution system in South Carolina.
12 Overall, DEC has invested approximately \$1.2 billion for facility additions in
13 South Carolina.

14 **Q. CAN YOU PROVIDE MORE DETAIL ABOUT THE ADDITIONAL**
15 **INVESTMENTS THE COMPANY HAS MADE IN ITS DISTRIBUTION**
16 **SYSTEM SINCE THE LAST RATE CASE?**

17 A. Yes. The following chart illustrates the major categories of the distribution
18 system and the investments from January 1, 2019 through September 30, 2023.¹

¹ Distribution plant additions for October 2023 through December 2023 will be provided in the supplemental testimony of Witness LaWanda Jiggetts.

Figure 1 – DEC SC Distribution Plant Additions

South Carolina continues to be a desirable place to live and work, as evidenced by the State's increasing population and robust economic development. In particular, around 62,500 DEC customers in South Carolina were added from January 1, 2019 through September 30, 2023, representing a 10.5% increase in customers. Typically, new customers locate in urban and suburban areas of DEC's territory where the Company must upgrade or extend distribution facilities to serve them. Approximately 57.1% of the Company's distribution investments are for load expansion-related work, including serving new customers, lighting installations, and additional capacity.

Approximately 25.8% of the investments on the Company's distribution system relate to standard reliability and integrity programs that address safety and environmental requirements, and maintenance including service restoration.

1 Approximately 16.6% of the Company's distribution plant investments
2 are associated with South Carolina Grid Improvement Plan programs including
3 Distribution Automation, Distribution Transformer Retrofit, Distribution
4 Hardening & Resiliency, Self-Optimizing Grid, Integrated Volt/Var Control,
5 and Targeted Undergrounding.

6 Finally, an additional 0.5% of investments are for AMI, ET
7 infrastructure, and other miscellaneous investments.

8 **Q. IN YOUR OPINION, ARE ALL THE DISTRIBUTION FACILITIES**
9 **INCLUDED IN DEC'S BASE RATE REQUEST USED AND USEFUL IN**
10 **PROVIDING SERVICE TO DEC'S RETAIL ELECTRIC CUSTOMERS**
11 **IN SOUTH CAROLINA?**

12 A. Yes. Including the projects that will be completed through December 31, 2023,
13 all the reasonable and prudent additions to DEC's distribution system requested
14 for recovery in base rates are used and useful in providing service to its
15 customers in South Carolina.

16 **II. OPERATIONAL PERFORMANCE OF THE COMPANY'S**
17 **DISTRIBUTION SYSTEM**

18 **Q. HAVE THE DISTRIBUTION INVESTMENTS THAT THE COMPANY**
19 **MADE SINCE ITS LAST RATE CASE ALLOWED IT TO MEET ITS**
20 **OPERATIONAL PERFORMANCE AND CUSTOMER SATISFACTION**
21 **GOALS?**

22 A. Yes. DEC's principal goal is to deliver safe and reliable electric service at
23 reasonable prices. We measure this goal based on customer satisfaction, safety,

1 and reliability of the Company's distribution system, while responsibly
2 managing operational and capital expenditures for the benefit of our customers.

3 **Q. PLEASE EXPLAIN THE METRICS THE COMPANY USES TO**
4 **MEASURE THE EFFECTIVENESS OF ITS DISTRIBUTION**
5 **OPERATIONS.**

6 A. DEC uses industry-standard metrics as defined by the Institute of Electrical and
7 Electronics Engineers Standard 1366-2022 to assess the overall effectiveness of
8 its distribution operations. These metrics include reliability indices to measure
9 the performance of the distribution system and customer satisfaction scores to
10 determine how well the Company is meeting the needs of its customers. These
11 metrics include:

- 12 • **System Average Interruption Frequency Index ("SAIFI")** is a
13 ratio that indicates how often the average customer experiences a
14 sustained interruption over a predefined period of time.
- 15 • **System Average Interruption Duration Index ("SAIDI")** is a
16 ratio that indicates the total duration of interruption for the average
17 customer during a predefined period of time.

18 **Q. HOW HAS DEC'S DISTRIBUTION SYSTEM PERFORMED UNDER**
19 **THESE METRICS?**

20 A. Our system has performed well, and we have continued to provide safe, reliable,
21 and reasonably priced electric service to our customers. As stated previously,
22 our reliability metrics have been impacted in recent years in large part due to an
23 increase in public vehicle accidents since the COVID pandemic in 2020 and an

1 increase in hotline tag outages associated with our Grid Improvement Plan
 2 work. Graphs displaying the trends for these metrics are set forth below, with a
 3 dashed trendline as well as a solid line representing actual values (blue lines
 4 include all outage causes, orange lines exclude hotline tag outages and vehicle
 5 accidents):

Figure 2 – DEC Historic SAIFI

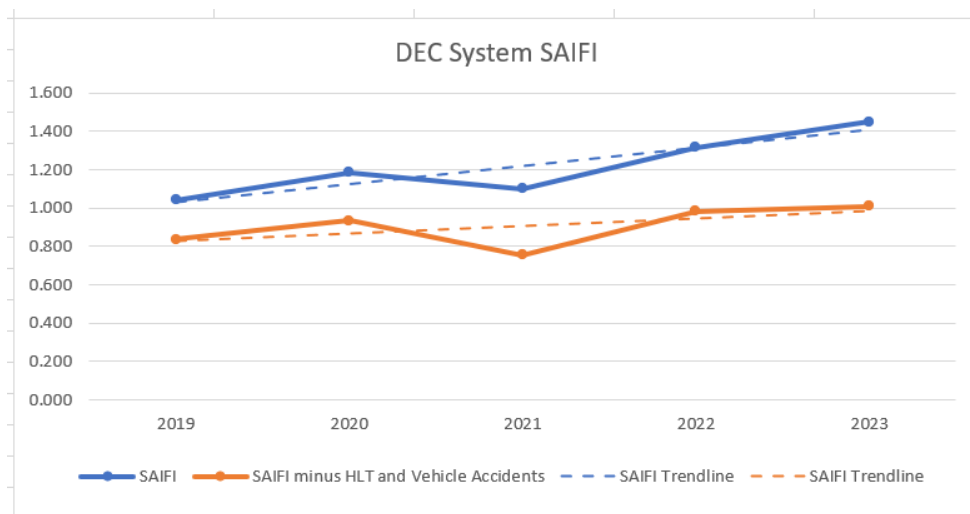
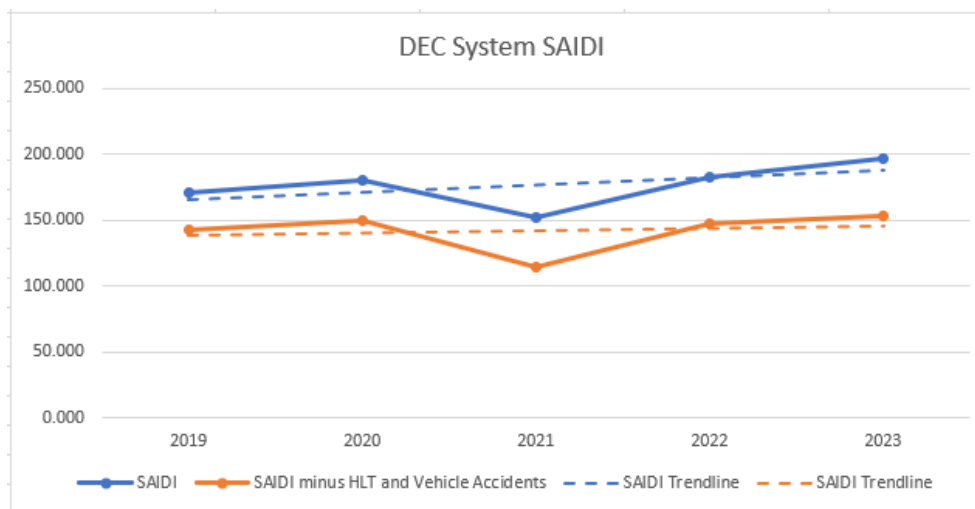


Figure 3 – DEC Historic SAIDI



1 Viewed over the past five years, the overall trend of SAIDI is showing a slight
2 worsening (1% annually from 2019 – 2023 projected year-end) across the DEC
3 system. The SAIFI trend is showing a worsening (5% annually from 2019 –
4 2023 excluding hotline tags and vehicle accident outages). We expect that as
5 we implement Self-Optimizing Grid on a majority of our DEC South Carolina
6 circuits in the upcoming years (currently only 9% of DEC SC circuits are served
7 by automation) SAIFI will shift to an improving trend. DEC's Grid
8 Improvement Plan investments, which reduce the frequency and impact of
9 outages, are mitigating the current SAIDI and SAIFI trend.

10 Hardening the grid from public interference (vehicle accidents) is one
11 of the key target areas of the Distribution Hardening and Resiliency Program.
12 The Targeted Undergrounding program minimizes the number of outage events
13 for customers as we convert customers served by overhead distribution line
14 segments to underground. The Self-Optimizing Grid program redesigns key
15 portions of the distribution system and transforms it into a dynamic, smart-
16 thinking grid. These investments enable the grid to automatically reroute power
17 around trouble areas, like a tree on a power line, to quickly restore power to the
18 maximum number of customers and rapidly dispatch line crews directly to the
19 source of the outage. As these programs are further executed, we anticipate that
20 our reliability metrics will improve as factors such as vehicle accidents are
21 further mitigated and our grid becomes more automated.

1 **Q. PLEASE EXPLAIN THE COMPANY’S APPROACH TO**
2 **DISTRIBUTION VEGETATION MANAGEMENT AND DESCRIBE**
3 **ANY CHANGES THE COMPANY HAS MADE TO ITS APPROACH**
4 **SINCE ITS LAST RATE CASE IN SOUTH CAROLINA.**

5 A. Vegetation management is a critical component of the Company’s distribution
6 operations and the continued effort to drive performance for customers’
7 benefit. DEC uses a reliability-based prioritization model to inform its routine
8 integrated vegetation management program. In addition to routine circuit
9 maintenance, there are four other important components to the Company’s
10 overall vegetation management approach.

11 (1) Herbicide Program – The purpose of the Annual Herbicide Program is
12 to control re-growth of incompatible vegetation within the right-of-way
13 “floor” in non-landscaped areas;

14 (2) Hazard Tree Program – Implemented in 2014, this program is designed
15 to identify/remove dead, dying, and diseased trees primarily located
16 outside of the existing distribution right-of-way;

17 (3) Reactive Program – This program is designed to address customer-
18 initiated requests as well as vegetation-related power quality issues
19 identified as part of outage follow-up investigations; and

20 (4) Disciplined vegetation management outage follow-up process tied to a
21 formal internal reliability review process.

22 As recommended in the Distribution Vegetation Management Species
23 Frequency and Re-Growth Study (“Tree Growth Study”) completed in 2013,

1 DEC continues to use a five-year pruning target for urban circuits, seven-year
2 target for pruning mountain circuits and a nine-year target for pruning other
3 circuits while balancing resource needs.

4 **Q. WILL THE COMPANY'S VEGETATION MANAGEMENT PLAN**
5 **CURE ALL ADVERSE SYSTEM IMPACTS THAT THE COMPANY**
6 **HAS SEEN DEVELOP IN THE RECENT PAST?**

7 A. No. Vegetation events account for 20% to 25% of all outage events. It is
8 important to understand that approximately 75% to 80% of all outages on the
9 grid are due to other causes, such as equipment failure, public accidents, and
10 environmental factors. In addition, for the 20% to 25% of events that are
11 vegetation related, only 48% of these are related to vegetation inside the right-
12 of-way where the Company can perform vegetation management. The other
13 52% occurs due to trees outside the right-of-way that will fall into or otherwise
14 impact distribution lines, and in most cases the Company does not have the
15 ability to perform vegetation management on these trees that are located on
16 private property. For the outages that occur because of trees inside the right-of-
17 way, even a perfectly executed integrated vegetation management plan will not
18 bring this number down to zero but instead will only help minimize vegetation
19 outages.

20 Keeping these facts in mind, the Company used the Tree Growth Study
21 that I previously mentioned to determine the optimal right-of-way trimming
22 cycle targets for its geographical areas. Trimming more often than these now
23 pre-determined, optimal cycles will only provide diminishing returns and would

1 not be cost effective. Drastic clear cutting and going onto customer property to
2 cut down live trees via condemnation or negotiating with customers for rights
3 on their property is also impractical and not cost effective. Instead, programs
4 such as Targeted Undergrounding, which will be discussed in more detail later
5 in my testimony, can be effectively used to address vegetation outages caused
6 by trees outside of the right-of-way, where the base vegetation plan stops.

7 **III. DEC'S GRID IMPROVEMENT PLAN INVESTMENTS AND**
8 **OPERATIONAL BENEFITS SINCE THE LAST RATE CASE IN**
9 **SOUTH CAROLINA**

10 **Q. CAN YOU PLEASE QUANTIFY THE INVESTMENTS MADE IN**
11 **SOUTH CAROLINA SINCE DEC'S LAST RATE CASE UNDER ITS**
12 **GRID IMPROVEMENT PLAN?**

13 A. Yes. The DEC South Carolina Grid Improvement Plan distribution plant
14 investments, as well as the South Carolina retail allocated portion of general
15 and intangible plant investments, made since the last rate case total
16 approximately \$291.3 million. The following table shows these investments
17 made through the Grid Improvement Plan programs from January 1, 2019
18 through September 30, 2023.

Grid Improvement Plan Programs (\$ in millions)	Plant In-Service Jan. 1, 2019- Sept. 30, 2023
Self-Optimizing Grid	\$71.5
Integrated Volt/VAR Control	\$73.8
Oil Breaker Replacement	\$6.8
Targeted Undergrounding	\$35.3
Distribution Hardening & Resiliency	\$17.2
Enterprise Communications	\$34.2
Distribution Automation	\$31.0
Enterprise Applications	\$7.6
Integrated System Operations Planning	\$1.4
Physical and Cyber Security - Distribution	\$3.6
Transmission Bank Replacement*	\$6.1
Transmission Hardening & Resiliency*	\$0.5
Transmission System Intelligence*	\$2.3
<i>Total</i>	\$291.3

*These Transmission programs also included distribution assets.

1 While I discuss the distribution grid plan investments, Witness Bennett Fogg
2 discusses the transmission grid investments under the Grid Improvement Plan.

3 **Q. HAS THE COMPANY PROVIDED DESCRIPTIONS OF THESE GRID**
4 **IMPROVEMENT PLAN PROGRAMS?**

5 A. Yes. The Company previously provided program descriptions of these Grid
6 Improvement Plan programs in Docket No. 2018-319-E, Oliver Exhibit 4. For
7 ease of reference, I have included the program summaries as Guyton Direct
8 Exhibit 1 – South Carolina Grid Improvement Plan Program Summaries. These
9 summaries also describe which grid capabilities each program enables as well
10 as the program’s value to customers.

1 **Q. WHAT ARE SOME OF THE OPERATIONAL BENEFITS**
2 **ASSOCIATED WITH THE GRID IMPROVEMENT PLAN WORK**
3 **COMPLETED TO DATE?**

4 A. Much of the benefits of the Grid Improvement Plan programs are comprised of
5 an increased reliability and resiliency of DEC's grid. These impacts stem
6 directly from enhanced hardening and physical security measures, targeted
7 vegetation management, and more reliable and resilient infrastructure that can
8 avoid outages and then quickly restore service when outages are not avoidable.
9 Further, in the context of recent physical security issues like those witnessed in
10 Wateree, South Carolina and Moore County, North Carolina, and the cyber
11 challenges faced by other energy utilities (like Colonial Pipeline), the
12 importance of the grid modernization and transformation that is the goal of the
13 Company's Grid Improvement Plan is more important than ever.

14 From inception through September 30, 2023, the Self-Optimizing Grid
15 program has helped avoid approximately 316,500 extended customer outages
16 in South Carolina, saving customers more than 935,000 hours (56 million
17 minutes) of total outage time. At the same time, it is paving the way for better
18 management of local distributed energy resources by expanding line capacity
19 to allow for two-way power flow. As of September 30, 2023, the Company
20 served 14.7% of DEC's South Carolina customers by automation as compared
21 to 6.9% of customers as of December 31, 2018.

22 The Targeted Underground ("TUG") program has converted
23 approximately 25 miles of outage prone parts of the DEC South Carolina

1 system from overhead to underground, which supports system resiliency during
2 major events such as severe storms to minimize the number of outages and
3 restore service more quickly and cost effectively to all customers in South
4 Carolina. The Company uses advanced data analytics to target specific outage-
5 prone line segments and develop a strategy for moving that segment of line
6 underground. Criteria for consideration in the selection of targeted facilities
7 include performance of overhead lines, age of the assets, service location (e.g.,
8 lines located in backyards where access is limited), and vegetation impacts (e.g.,
9 heavily vegetated and often costly and difficult to trim). Projects have been
10 completed in Anderson, Greenville, Greenwood, Kershaw, Lancaster,
11 Newberry, Oconee, Spartanburg, and York counties.

12 The Integrated Volt/VAR Control (“IVVC”) program enables grid
13 operators to operate the distribution grid in a conservation voltage reduction
14 mode that supports energy conservation on a year-round basis for
15 approximately 90% of the hours in the year. Inception-to-date through
16 September 30, 2023, 87 substations and 374 distribution feeder lines reached
17 the IVVC construction complete status. This means the physical work inside
18 the station fence and on the distribution lines is finished. These substations are
19 in Anderson, Cherokee, Chester, Greenville, Greenwood, Lancaster, Laurens,
20 Newberry, Oconee, Pickens, Spartanburg, and York counties and are now
21 available for the testing and enablement phase of IVVC. Also, notably, during
22 2022, IVVC devices at the Knollwood substation went through a detailed
23 testing protocol and enablement. This was an important milestone for the

1 program as it represents the first DEC substation to successfully activate IVVC
2 functionality.

3 The Long Duration Interruption/High Impact Sites program projects
4 have improved the reliability for parts of the grid with high potential for
5 extended outages and areas that provide critical services to the community. For
6 example, Greenville Memorial Hospital is the Upstate's sole Level 1 Trauma
7 Center and the region's only pediatric trauma center. The Upstate – Greenville
8 Health System Critical Care project relocated and replaced multiple manually
9 operated live front switchgears with remotely operated automated switchgears,
10 and established primary and alternate sources to all switchgear locations. These
11 upgrades will mitigate outages experienced by customers in previous years.

12 Integrated System & Operations Planning is a comprehensive planning
13 process using new tools to integrate generation, load, transmission, and
14 distribution together to address an increasingly diverse set of energy factors
15 more effectively, efficiently, and economically. The Advanced Distribution
16 Planning ("ADP") Toolset achieved full-scale deployment to distribution
17 planners in the Carolinas in August 2021. Development of ADP tools and
18 processes is transforming distribution planning by introducing automation to
19 improve efficiency of complex analytical processes needed for distribution-
20 oriented investments that include distributed energy resources.

21 Enterprise Communications programs address technology
22 obsolescence, secure vulnerabilities, and provide new workforce-enabling
23 capabilities. These programs include improvement and expansion of the entire

1 communications network from the high-speed, high-capacity backbone fiber
2 optic and microwave networks to the wireless connections at the edge of the
3 grid. These upgrades build the secure communications required for the
4 increasing number of smart components, sensors and remotely activated
5 devices on the transmission and distribution systems. With this technology, the
6 Company captures and utilizes grid data for more efficient operation and
7 dispatches trucks more effectively during adverse weather, improving response
8 times for customer requests.

9 DEC's Grid Improvement Plan investments are already providing
10 resiliency benefits to customers as noted by the South Carolina Office of
11 Regulatory Staff's ("ORS") consultant in The Final Report on the Resiliency of
12 South Carolina's Electric and Natural Gas Infrastructure Against Extreme
13 Winter Storm Events filed by the ORS in Docket No. 2021-66-A. A review of
14 that report reveals that DEC fared well and that the Grid Improvement Plan
15 enabled the investments that helped lead to such a strong assessment of winter
16 readiness by the consultant in that docket. DEC explained in its filing to the
17 Commission in that docket that the constructive treatment of its grid
18 investments contributed to the readiness to respond to increasingly severe
19 storms and emergency events and to its overall reliability and resiliency.

20 The Company has shared progress made to-date on South Carolina Grid
21 Improvement Plan projects with interested South Carolina stakeholders on an
22 annual basis and has also shared preliminary plans for 2024-2026 as discussed
23 later in my testimony.

1 **Q. WERE THE GRID IMPROVEMENT PLAN PROGRAMS**
2 **IMPLEMENTED SOLELY FOR RELIABILITY PURPOSES?**

3 A. No. While system reliability enhancement is obviously an important benefit of
4 the Grid Improvement Plan programs, they were implemented and continue to
5 be implemented for the primary purpose of addressing the trends identified in
6 the Company's last general rate case proceeding and discussed further below,
7 which continue to be the over-riding influences on electric distribution system
8 development. In light of: increased load growth; the increased and heightened
9 storm activity in the Carolinas; the heightened need for a more resilient and
10 hardened grid; the need to continue preparing for an electric system served by
11 diverse generation resources, including smaller-sized, multiple location
12 renewables; the need to protect from cyber and physical security threats; and
13 the desire to advance the Company's customer communications capabilities,
14 along with the other compelling factors identified in the voluminous materials
15 filed in Docket No. ND-2020-28-E, it is clear that the need for, and benefit of,
16 grid modernization is greater now than ever.

17 **Q. DID ACTUAL COSTS ALIGN WITH COST BENEFIT ANALYSIS**
18 **ASSUMPTIONS FOR GRID IMPROVEMENT PLAN PROGRAMS?**

19 A. Yes. For the majority of programs, costs have aligned or come in lower than the
20 cost benefit analysis ("CBA") assumptions. The TUG program actual cost per
21 mile has been higher than the original assumptions. This is primarily due to
22 increased right-of-way acquisition costs, more detailed engineering efforts to
23 determine the full scope of projects, public engagement associated with these

1 conversion projects, and increased undergrounding boring costs when moving
2 into neighborhoods and subdivisions. The Company monitored this cost
3 increase and adjusted work plans by completing fewer miles than originally
4 targeted to keep the program's total cost more in line with original estimates
5 while also customizing work to individual customer and property requirements.
6 While the Company has completed fewer miles than originally targeted, the
7 commensurate benefits associated with those miles are expected to be achieved.

8 The Grid Improvement Plan programs are designed to be evolutionary
9 in nature and customers are receiving benefits as anticipated. While some
10 programs have experienced cost variations, the underlying rationale for
11 engaging in these programs remains sound. The Grid Improvement Plan
12 programs were identified and implemented to address the seven "Megatrends"
13 impacting Duke Energy's grid in South Carolina as previously described in
14 Docket No. 2018-319-E. These trends are summarized below:

- 15 1. Population and business growth continues in South Carolina, and is
16 heavily concentrated in urban and suburban areas;
- 17 2. Technology is advancing at a rapid rate in the areas of renewables and
18 distributed energy resources, which means there are new types of load
19 and resources impacting the grid;
- 20 3. Technology is also advancing rapidly within the devices and systems
21 that operate and manage the transmission and distribution grids, offering
22 new capabilities and requiring new functionalities;

- 1 4. Customer expectations and use of the grid are very different from
2 generations past;
- 3 5. Environmental trends in the public and private sector incentivizing and
4 requiring access to clean energy sources;
- 5 6. The number, severity, and impact of weather events on DEC's service
6 territory has been increasing significantly; and
- 7 7. The threat of physical and cyber-attacks on grid infrastructure is more
8 sophisticated and is on the rise.

9 These seven ongoing Megatrends continue to drive the need for the Company
10 to maintain and execute on its Grid Improvement Plan that goes beyond the
11 work that the Company performs to maintain base-level operations and focuses
12 on the protection, modernization, and optimization of the grid.

13 **Q. HAS THE COMPANY IDENTIFIED REDUCTIONS IN OPERATING**
14 **EXPENSES, INCREASED CONSERVATION, OR REDUCTIONS IN**
15 **PEAK DEMAND ATTRIBUTED TO GRID IMPROVEMENT PLAN**
16 **EXPENDITURES TO PLACE INTO THE REGULATORY ASSET**
17 **ACCOUNT?**

18 A. No. The Grid Improvement Plan is not a short term cost savings program; rather,
19 it is a transformative investment in the grid to modernize and protect the grid
20 while optimizing the customer experience. As such, while the Company may
21 have otherwise avoided incurring certain costs due to Grid Improvement Plan
22 expenditures (e.g., fewer outages, lower fuel costs due to IVCC), deploying
23 these programs also comes with additional costs incurred to maintain new

1 technology in the field (e.g., additional costs due to automated equipment and
2 transformer retrofits). It is also impacted by the fact that our system growth,
3 both Grid Improvement Plan and non- Grid Improvement Plan related, adds
4 new O&M requirements on top of historic O&M requirements, which further
5 complicates any effort to discretely identify Grid Improvement Plan related
6 O&M savings. Further, it is difficult to quantify avoided O&M expenses as a
7 result of the Grid Improvement Plan investment due to the speculative nature
8 of assumptions that would need to be made regarding avoided outages.
9 Therefore, we have not made any reductions to the Company's regulatory asset
10 account. As the Grid Improvement Plan Work is completed across the system
11 over the long term, the Company anticipates these investments will place
12 downward pressure on rates over time as the grid becomes more resilient as a
13 result of these investments but it is a trend that is hard to quantify for the reasons
14 I explained above.

15 **Q. IS THERE A DIFFERENCE BETWEEN THE INCREMENTAL O&M**
16 **EXPENSE MENTIONED IN ORDER NO. 2018-751 AND YOUR**
17 **DESCRIPTION OF “ONGOING” O&M ATTRIBUTABLE TO GRID**
18 **IMPROVEMENT PLAN PROGRAMS?**

19 A. Yes, and this is an important point. The “Incremental Operating and
20 Maintenance” costs authorized for regulatory asset treatment in Order No.
21 2018-751 are the O&M costs associated with installation of Grid Improvement
22 Plan program equipment, whereas “ongoing” Grid Improvement Plan O&M
23 expense represents costs incurred by DEC *after installation* of the Grid

1 Improvement Plan program equipment. The “ongoing” post-installation O&M
2 expenses are not authorized for regulatory asset accounting treatment.

3 **Q. IS IT YOUR UNDERSTANDING THAT THE COMPANY HAS**
4 **RECORDED TO A REGULATORY ASSET GRID IMPROVEMENT**
5 **PLAN-RELATED COSTS AS AUTHORIZED IN ORDER NO. 2018-751?**

6 A. Yes. As is explained in the testimony of Witness LaWanda Jiggetts, since the
7 Company’s last general rate case, it has recorded incremental O&M costs
8 (installation), depreciation, and property taxes associated with the Grid
9 Improvement Plan, as well as the carrying cost on the investment and on the
10 deferred costs at DEC’s weighted average cost of capital consistent with Order
11 No. 2018-751.

12 **Q. IS THE COMPANY PROPOSING TO RECOVER ITS DEFERRED**
13 **GRID IMPROVEMENT PLAN COSTS AT THIS TIME?**

14 A. Yes. As is set forth in the testimony of Witness Jiggetts, the Company proposes
15 that these costs be amortized over a seventeen-year period.

16 **Q. HAS DEC COMPLETED ITS GRID IMPROVEMENT PLAN ACROSS**
17 **THE STATE OF SOUTH CAROLINA?**

18 A. No. The Company shared preliminary plans for 2024-2026 South Carolina Grid
19 Improvement Plan work with interested stakeholders in the fall of 2023 and
20 filed that information in Docket No. ND-2020-28-E.

1 **Q. IS THE COMPANY PROPOSING THAT THE COMMISSION**
2 **APPROVE ITS GRID IMPROVEMENT PLAN PROGRAMS ON A**
3 **GOING FORWARD BASIS IN THIS DOCKET?**

4 A. No. On December 15, 2023, the Company filed its Petition to Extend
5 Accounting Order to Continue Regulatory Asset Treatment For Ongoing Grid
6 Improvement Plan Costs in Docket No. 2023-403-E for DEC South Carolina
7 Grid Improvement Plan projects undertaken or placed in-service after the
8 December 31, 2023 capital cut-off date in this case until the rate effective date
9 of DEC South Carolina's next general rate case.

10 **Q. HAS THE COMPANY SHARED PROGRESS ON GRID**
11 **IMPROVEMENT PLAN WORK WITH INTERESTED**
12 **STAKEHOLDERS IN SOUTH CAROLINA?**

13 A. Yes. The Company has filed annual status reports in Docket No. ND-2020-28-
14 E. The Company has also hosted several virtual forums since 2018 to inform
15 interested stakeholders on progress made on the Grid Improvement Plan,
16 provide program and project highlights, as well as take questions and receive
17 feedback from attendees. These reports, presentations, and corresponding lists
18 of forum attendees can be found in Guyton Direct Exhibits 2 through 9.

19 **Q. DO THESE EXHIBITS ONLY CONTAIN INFORMATION ABOUT**
20 **DEC?**

21 A. No. Duke Energy created a plan for the grid in South Carolina, and that included
22 both DEC and DEP. I believe it is important to discuss plans and results jointly
23 as we think of the needs of customers in the state. Moreover, I believe it

1 facilitates better discussions among parties and entities who have an interest in
2 both service territories to see the material presented together. The variance
3 reports included within these exhibits do have discrete DEC program and
4 project details.

5 **Q. DO THESE REPORTS CONTAIN PLANT IN-SERVICE**
6 **INFORMATION?**

7 A. No. The annual status reports only contain capital expenditure information,
8 which is construction work in progress for projects under construction.

9 **Q. WILL THE COMPANY CONTINUE TO ENGAGE WITH**
10 **PARTICIPATING STAKEHOLDERS ABOUT ONGOING GRID**
11 **IMPROVEMENT PLAN DEPLOYMENT WORK?**

12 A. Yes. We expect to have continuing dialogue with interested parties on the
13 Company's Grid Improvement Plan, how it benefits and affects those interested
14 parties, and to continue to bring those findings to the Commission. We
15 appreciate the parties' participation and input in these stakeholder engagement
16 sessions.

17 **IV. OTHER MATTERS**

18 **Q. ARE THERE OTHER TYPES OF PROJECTS THE COMPANY HAS**
19 **ENGAGED IN FOLLOWING ITS LAST RATE CASE THAT DO NOT**
20 **FALL INTO THE CATEGORIES OF NORMAL SYSTEM GROWTH OR**
21 **GRID IMPROVEMENT PLAN PROJECTS?**

22 A. Yes. There are several described as AMI and ET in the investments pie chart in
23 Section I of my testimony.

1 **Q. PLEASE DESCRIBE AMI DEPLOYMENT ACROSS THE DEC**
2 **SYSTEM.**

3 A. DEC deployed the AMI technology by zones. To efficiently and effectively
4 deploy AMI, the Company first strategically placed Field Area Network
5 (“FAN”) equipment in a deployment zone. Then the Company installed smart
6 meters that communicated through the FAN collection point equipment, or
7 other nearby collection point equipment, allowing some overlap for redundancy
8 purposes. This process was repeated on a rolling basis, in which the Company
9 began work on new zones while deployment in other zones was underway.

10 **Q. HAS DEC COMPLETED ITS AMI DEPLOYMENT IN SOUTH**
11 **CAROLINA?**

12 A. Yes. DEC’s South Carolina AMI deployment was substantially completed by
13 September 2019.

14 **Q. ARE COSTS FOR THE AMI IMPLEMENTATION INCLUDED IN THIS**
15 **RATE CASE?**

16 A. Yes. The Company is seeking to recover costs representing the depreciation
17 expense incurred for the installed AMI meters, as well as the associated carrying
18 costs of the investment. These costs were recorded to a regulatory asset account
19 approved by this Commission in Order No. 2016-489. The description of this
20 pro-forma adjustment is in Witness Jiggetts’ testimony.

1 **Q. ARE THERE BENEFITS ASSOCIATED WITH AMI**
2 **IMPLEMENTATION?**

3 A. Yes. Regular meter reads and off-cycle meter reads (for the purpose of
4 transferring service) as well as service connections and disconnections can be
5 performed remotely for customers, eliminating the need for a technician to
6 come to the customer's premise. During storm outages, damage assessment and
7 repair verification can be done much more quickly when customers have a
8 smart meter. Through AMI, DEC has the capability to interrogate individual
9 smart meters or masses of smart meters to determine if customers have power.
10 During the damage assessment phase of a storm, the mass meter interrogation
11 capability allows the Company to have a better view of where outages are
12 located on the system. This functionality helps reduce the assessment time, thus
13 reducing outage durations for customers.

14 During the power restoration phase of a storm, the capability of mass
15 meter interrogation enables the Company to determine whether power has been
16 restored to each meter before leaving an area. For example, before the AMI
17 deployment, if the Company restored power to a circuit that was experiencing
18 an outage, DEC did not know whether each individual home had been restored
19 along that circuit until the customer notified DEC that they were still without
20 service, and by that time, the Company's crew may have moved on to a new
21 area. Smart meters allow the Company to know whether individual customers
22 are back in service before the Company moves on. And lastly, during the
23 cleanup phase of a storm, when the Company is clearing out single-outage

1 tickets, the capability of interrogating individual meters can tell the Company
2 when customers power has already been restored, without the need to send a
3 technician to the location to confirm power has been restored. Witness Retha
4 Hunsicker discusses additional benefits associated with AMI in her testimony.

5 **Q. PLEASE PROVIDE A SUMMARY OF THE COMPANY'S ET PILOT.**

6 A. In October 2020, the Commission approved—through Order No. 2020-645
7 issued in Docket No. 2018-321-E—the Company's ET Pilot for a period of
8 three years. The ET Pilot allows DEC to better understand the grid impacts of
9 serving EV charging equipment and customer charging behavior and will help
10 to ensure that charging technologies for EVs are safely, reliably, and cost-
11 effectively integrated into the grid. DEC's ET Pilot, at the time of this filing,
12 consists of the Direct Current ("DC") Fast Charger Program and the Residential
13 EV Charging Program.

14 **Q. WHAT IS THE DC FAST CHARGER PROGRAM?**

15 A. The DC Fast Charger Program was approved as part of the ET Pilot and allows
16 the Company to install, own, and operate up to 40 DC Fast Chargers at up to 20
17 sites across the DEC South Carolina service territory.

18 **Q. PLEASE DESCRIBE DEC'S IMPLEMENTATION OF THE DC FAST**
19 **CHARGER PROGRAM SINCE ITS APPROVAL.**

20 A. The Company conducted a request for proposals for EV charging equipment
21 hardware and network software and has selected sites to locate the DC Fast
22 Chargers. To date, all 20 sites in DEC's South Carolina service territory have

1 executed agreements and 12 of the DC Fast Charging sites, which includes 24
2 total DC Fast Chargers, are operational.

3 **Q. ARE THESE DC FAST CHARGER COSTS INCLUDED IN THIS RATE**
4 **CASE?**

5 A. Yes. The costs associated with DC Fast Chargers that are operational as of
6 December 31, 2023, are included in this rate case.² In a stipulation entered into
7 between DEC and ORS and approved by the Commission in Docket No. 2018-
8 321-E, the parties agreed that all costs associated with the ET Pilot would be
9 reviewed for potential recovery in a base rate proceeding.³

10 **Q. WHAT IS THE RESIDENTIAL EV CHARGING PROGRAM?**

11 A. The Residential EV Charging Program was also approved as part of the
12 Company's ET Pilot and allows the Company to provide a rebate to support the
13 installation of smart, networked Level II (208/240V) EV supply equipment. As
14 part of the program, the Company provides a one-time rebate and quarterly
15 participation payments for up to 400 residential customers installing qualifying
16 Level II charging equipment in exchange for utility management of home
17 charging during defined hours.

² As of the date of this testimony filing, the amount included in the Company's proposed recovery are actual expenditures and associated ET Pilot costs for DC Fast Chargers placed in-service through September 30, 2023; these expenditures and costs will be updated in a supplemental filing for DC Fast Chargers placed in-service between October 1, 2023 and December 31, 2023.

³ See also Order No. 2020-645 at Ordering Paragraph 4, Docket No. 2018-321-E (Oct. 15, 2020) ("The Company's costs associated with the ET Pilot . . . shall be reviewed by ORS and interested parties for prudence and potential recovery in a subsequent base rate case.").

1 **Q. PLEASE DESCRIBE THE COMPANY'S IMPLEMENTATION OF THE**
2 **RESIDENTIAL EV CHARGING PROGRAM.**

3 A. The Company's Residential EV Charging Program was implemented starting
4 in January 2021. There was a maximum enrollment of 310 customers in the
5 program and the application window closed in November 2021. As of October
6 2023 there were 243 active participants.

7 **Q. ARE THE RESIDENTIAL EV CHARGING PROGRAM COSTS**
8 **INCLUDED IN THIS RATE CASE?**

9 A. Yes. The O&M costs associated with the Residential EV Charging Program
10 incurred during the test period ending December 31, 2022, are included in this
11 rate case.

12 **Q. HOW WILL THE IMPLEMENTATION OF ELECTRIFICATION**
13 **PROJECTS LIKE THE DC FAST CHARGER PROGRAM AND**
14 **RESIDENTIAL EV CHARGING PROGRAM BENEFIT ALL OF THE**
15 **COMPANY'S CUSTOMERS, INCLUDING CUSTOMERS WHO DO**
16 **NOT OWN EVs?**

17 A. Electrification of the transportation sector will provide benefits to all utility
18 customers by lowering the per unit cost of electricity.⁴ A foundational, publicly
19 available network of DC Fast Chargers on South Carolina's highways is a
20 critical enabler for EV uptake. Additionally, the Company's work to install,
21 own, and operate charging stations informs processes and needs of customers

⁴ Reference discussion on page 9 of the Electric Vehicle Cost-Benefit Analysis study by M.J. Bradley & Associates, LLC filed on October 10, 2018 as Exhibit A in Docket No. 2018-321-E.

1 and other third parties that will inevitably seek to install charging infrastructure
2 similar to that deployed in the DC Fast Charger Program.

3 The Residential EV Charging Program leverages the flexibility
4 associated with day-to-day EV charging to directly explore the potential for
5 system cost savings associated with EV adoption. Participants in the program
6 agree to avoid charging during system peak hours and allow the Company to
7 collect usage characteristics of EV charging behavior. In turn, the Company can
8 better understand potential grid and utility impacts from EV charging and the
9 potential to implement managed charging.

10 **Q ARE THESE PROGRAMS REPRESENTATIVE OF THE TYPES OF**
11 **PROGRAMS THE COMPANY WILL SEEK TO DEPLOY IN THE**
12 **FUTURE?**

13 A. With regard to the Residential EV Charging Program, yes. The Company
14 generally designs programs to incent customers to use energy during non-peak
15 periods whenever possible, providing direct benefits for participants as well as
16 system benefits for non-participants. As a result, the Company expects to file
17 non-pilot EV load management programs and rates as indicated in its November
18 16, 2023, request to extend the program for a year or until a permanent program
19 can be implemented.

20 Conversely, the Company does not anticipate additional requests to
21 deploy rate-based public charging infrastructure in South Carolina following
22 the DC Fast Charger Program under the ET Pilot. The ET Pilot allowed the
23 Company not only to learn how to serve customer deployments of EV chargers,

1 but also to deploy foundational public charging infrastructure in South Carolina
2 at a time when there was little such activity. However, much has changed even
3 since the ET Pilot's approval in 2020. In particular, federal legislation has
4 specifically targeted deployment of the public fast charging infrastructure
5 necessary to support EV adoption. As a result, the Company's focus has shifted
6 to program structures that complement available federal funding while
7 simplifying transportation electrification for customers. Additionally, the
8 Company's experience with its DC Fast Charger Program will position it well
9 to enable the build out of federal-funded DC fast charging infrastructure in its
10 territory.

11 **Q. HOW DOES THE COMPANY'S SOUTH CAROLINA ET PILOT**
12 **COMPARE TO THOSE OF OTHER JURISDICTIONS IN WHICH**
13 **DUKE ENERGY OPERATES?**

14 A. The Company's South Carolina ET Pilot is very limited as compared to those
15 of other jurisdictions, which offer more extensive customer programs. While
16 DEC's ET Pilot consists solely of 40 DC Fast Chargers and a Residential EV
17 Charging Program, Duke Energy Florida has already installed well over 600
18 charging stations and was granted authorization to expand its EV charging
19 offerings to include additional fast chargers and fast charging station upgrades,
20 residential off-peak credits for 4,000 customers, and approximately 4,800
21 commercial and industrial customer charger rebates. In North Carolina, Duke
22 Energy is completing deployment of 280 charging stations, is deploying nearly
23 30 electric school buses to test bidirectional charging, has launched an EV

1 charging infrastructure funding program and a residential EV charging
2 subscription plan that includes a demand response component. Additionally, an
3 EV charger leasing program will launch in late 2023. Duke Energy Indiana's
4 ET programs include a residential off-peak program for up to 500 customers,
5 commercial rebates for up to 1,200 EV chargers, and a charger leasing program,
6 among other bus and fleet charging program offerings.

7 **Q. HAS THE COMPANY SHARED PROGRESS ON THE ET PILOT WITH**
8 **INTERESTED STAKEHOLDERS IN SOUTH CAROLINA?**

9 A. Yes. The Company has a stakeholder engagement process with interested
10 parties in an effort to understand parties' experience with the ET Pilot and the
11 effectiveness of the ET Pilot's programs. During the three-year Pilot, the
12 Company has submitted an annual report to the Commission containing: (1)
13 data on the number of site hosts flowing through the Fast Charge Fees to drivers,
14 the number of site hosts using alternative pricing, and aggregate amounts of
15 such fees collected by charger and year; and (2) data on the aggregate amount
16 collected under such arrangements by charger by year provided from site hosts
17 offering alternative pricing mechanisms for drivers. The Company recently
18 filed to extend the ET Pilots an additional year for the benefit of customers.
19 However, the 2021 through 2023 Annual SC ET Pilot Reports can be found in
20 Guyton Direct Exhibits 10 through 12.

21 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

22 A. Yes.